

Claims

1. A method of manufacturing a security thread or strip (1; 11) having a microchip (2), comprising the steps of:

providing a support material (14) on a substrate (12, 13);
softening said support material (14), preferably by heating said support material (14);

depositing a microchip (2) on or at least partly in the softened support material (14); and

curing said support material (14), preferably by cooling said support material (14).

2. The method of manufacturing a security thread (1; 11) according to claim 1, wherein said support material (14) is a heat-sensitive material, preferably a thermoplastic material containing a resin having a low melting point, such as wax, vinyl-polymer, polyurethane or any polymer or compound distributed in water based solvents or in any solvent that has the characteristic to modify its state from solid to soft.

3. The method of manufacturing a security thread (1) according to claim 1 or 2, wherein, in the step of softening said support material (14), the support material (14) is heated by a contact with a heating means (4) or by heat radiation, preferably by an infrared beam, and ultraviolet beam or a laser beam.

4. The method of manufacturing a security thread (1; 11) according to one of the preceding claims, wherein, in the step of depositing said microchip (2), the microchip (2) falls on the softened support material (14) and sinks at least partly into the support material (14) by its own gravity.
5. The method of manufacturing a security thread (1; 11) according to one of the preceding claims, wherein, in the step of depositing said microchip (2), said microchip (2) is positioned on the support material (14), and thereafter, when the support material (14) is still soft, the microchip (2) is pressed into the support material (14) by a pressing means.
6. The method of manufacturing a security thread (1; 11) according to one of the preceding claims, comprising a step of winding up the security thread (1) around a spool (9).
7. The method of manufacturing a security thread (1; 11) according to claim 6, wherein a timing of softening said support material (14), depositing said microchip (2) and/or curing said support material (14) is set in accordance to a winding operation of the spool (9).
8. The method of manufacturing a security thread (1) according to one of claims 6 or 7, wherein said spool (9) is a watermarking cylinder (9) which has register notches (8) and transports the security thread (1) into a paper compound (7), and said timing of softening said support material (14), depositing said microchip (2) and/or curing said support material (14) is set in accordance to a detection of said register notches (8).
9. A security thread (1; 11; 21) comprising
a substrate (12; 22), preferably of polyester;
a support material (14; 24) provided on the substrate (12; 22),
characterized by

a microchip (2) fixedly attached to or at least partly embedded in the support material (14; 24).

10. The security thread (1; 11; 21) according to claim 9, wherein the support material (14; 24) is a heat-sensitive material.

11. The security thread (1; 11; 21) according to claim 9 or 10, wherein the support material (14; 24) comprises an adhesive or glue material (24) which is preferably permanently active.

12. The security thread (1; 11; 21) according to claim 11, wherein a siliconated layer (25) is removable deposited on the adhesive or glue material (24), or wherein a siliconated layer (25) is deposited on the side of the thread (1; 11; 21) which is opposite to the adhesive or glue material (24).

13. The security thread (1; 11; 21) according to any one of claims 9 to 12, wherein the microchip (2) comprises an antenna for contactless data transfer.

14. The security thread (1; 11; 21) according to the preamble of claim 9, wherein the thread (1; 11; 21) comprises, preferably between the substrate (12; 22) and the support material (14; 24), a medium layer (13; 23) which carries specific characters, signs, holograms, data or any other information on a magnetic medium, metallic medium, fluorescent medium, printed medium or any other medium.

15. A document, preferable a paper document, comprising said security thread (1; 11; 21) according to any one of claims 9 to 14.